

**UPDATING HISTORICAL SHORELINE CHANGE RATES OF NORTH
KĀ‘ANAPALI, HONOKŌWAI, AND KAHANA, WEST MAUI**

A THESIS SUBMITTED TO
THE GLOBAL ENVIRONMENTAL SCIENCE
UNDERGRADUATE DIVISION IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

BACHELOR OF SCIENCE

IN

GLOBAL ENVIRONMENTAL SCIENCE

SPRING 2019

BY

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ABSTRACT

Tracking shoreline movement across the main Hawaiian Islands provides empirical data to assist in the development of better coastal management practices. We, the University of Hawai‘i at Mānoa Coastal Geology Group, use empirical data to calculate shoreline change rates on the islands of Kaua‘i, O‘ahu, and Maui. In this study, 2015 raw satellite imagery, provided by World View 3, was used to update the historical shoreline database of North Kā‘anapali, Honokōwai, and Kahana, West Maui. We calculated 2015 shoreline change rates and analyzed differences compared to an earlier database in 2007. The satellite imagery we used was orthorectified using ArcGIS and PCI Geomatica Inc., the low water mark and coastal vegetation line were digitized, and shoreline position locations were measured from transects spaced 20 meters alongshore. These locations were modeled using linear regression to identify long-term rates of change at each transect. Including the 2015 shoreline, the data revealed that 77% of all transects were erosional, compared to 73% in 2007. With regard to beach loss, the 2007 dataset experienced a loss of 80 meters whereas the 2015 dataset showed a loss of 920 meters. The expansion of eroding shoreline over the period 2007 to 2015 is consistent with the expected influence of rising sea level and continued coastal hardening. However, a full analysis that would have identified whether the changes were due to short-term variability or a valid statistical trend was not conducted.